

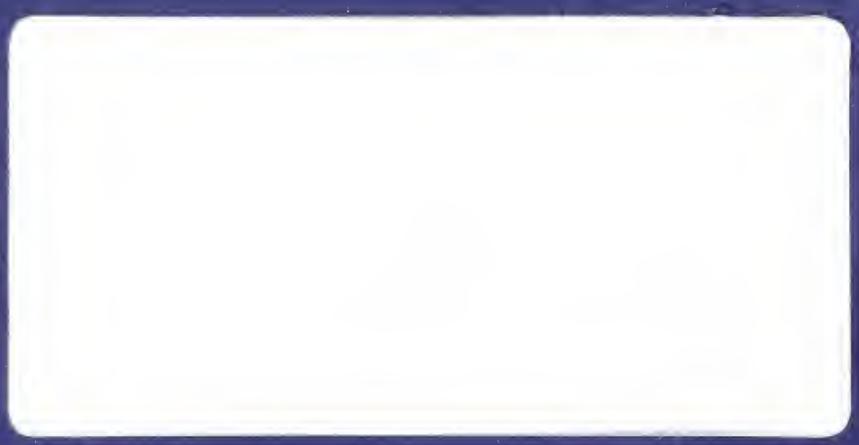
INPUT

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**Information Services
Opportunities & Trends, 1994-1999**

Retail Trade

U.S. Market Analysis Program



**Information Services
Opportunities & Trends, 1994-1999**

Retail Trade

August 1994

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**U.S. Information Services Market
Analysis Program**

Retail Trade

***Information Services Opportunities and
Trends, 1994-1999 Forecast Update***

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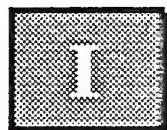
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Introduction

A

Purpose

The purpose of this INPUT 1994 Retail Trade report is to provide information on and an analysis of the retail industry and the business and technology trends which are radically shaping both business and information services in the retail industry. Shifts in market positioning during the last five years have drastically changed the retail market place. Retailers are adopting competitive countermeasures, including downsizing and consolidation, retailing through alternative channels, merchandising mix changes, more consumer services, and greater use of information technology to both survive and remain profitable. This 1994 INPUT report discusses these and other market issues which are influencing the retail market today.

B

Scope

The scope of this analysis and forecast is limited to the retail industry sector. The retail industry sector as defined by INPUT includes SIC Codes 52XX through 59XX and is composed of the following (see Exhibit I-1) retail groups.

Exhibit I-1

Retail Industry Sectors

- Supermarket/Grocery Stores
- Convenience Stores
- Department Stores
- General Merchandise/Mass merchants
- Specialty Hardlines
- Other

C

Methodology

1. Retailer Information

A portion of the information and data for this report was obtained by interviewing 10 retailers in early 1994. These retailers include both large and small companies, and were queried in order to identify business and technology trends in the retail market place. The retailers are:

• Alliance Stores	• K-Mart
• Bel Air Markets	• Lechmere
• Blockbuster Video	• Sears Roebuck & Company
• Egghead Software	• Venture Stores
• Fred Meyer	• 800-Flowers

2. Key Vendor Information

Ten key vendors which specialize in retail consulting, development, and systems integration were identified and interviewed. The vendors identified and provided their perspective on the business and technology trends which they see occurring in the retail market place.

These vendors are:

- Andersen Consulting
- Deloitte Touche
- SHL Systemhouse
- Ernst & Young
- GE Information Services
- Kronos, Inc.
- Micro Strategy, Inc.
- Oracle Corporation
- IBM - ISSC
- Shared Systems Corp.

3. INPUT's Library and Methodology

INPUT's corporate library, located in Mountain View, California, was extensively used. The resources in this library include on-line periodical data bases, subscriptions to a broad range of computer and general business periodicals, continually updated files on over 3,000 information services, vendors, and the most up-to-date U.S. Department of Commerce publications on industry statistics.

4. Forecast Methodology

It must be noted that vendors may be unwilling to provide detailed revenue information by delivery mode or industry. Also, vendors often use different categories of industry segments, or view their services as falling into different delivery modes from those used by INPUT. Thus, INPUT must estimate revenue for these categories on a best-effort basis. For this reason, the delivery mode and individual segment forecasts should be viewed as indicators of general patterns and trends rather than specific detailed estimates for individual years.

The Retail Trade report describes the many business trends, technology trends, information systems concerns and anticipated changes that will occur in the retail industry in next few years. INPUT also presents three case studies that describe how diverse retailers are using information technology to grow and be

competitive in today's retail market. And finally, INPUT calculates, projects, and reports the total IS Market Forecast and a Forecast by IS product/service sector through 1999.

The retail market is experiencing significant business changes that are both shaping and changing how retailers are conducting business in the 1990s. These trends indicate that the future of retailing will be driven by dramatic business changes which include the following:

- Large retailers are diminishing and consolidating
- Retailers are aligning IS and corporate goals through strategic planning and business process reengineering
- Retailers are making every attempt to lower employee "turnover"
- Major PC and electronic manufacturers are now marketing through consumer retailers
- Office products superstores are gaining market share
- The retailing business for children's goods is the largest growing retail vertical market in the world
- Retail entrepreneurs will continue to emerge in the 1990s
- Retailers must choose alternative channels of merchandising (e.g. electronic shopping, kiosks, catalogs, telemarketing, and event planning, etc.) to survive, remain competitive, and grow
- Customer service is still the key to successful retailing
- Database marketing (frequent shopper programs), and consumer information will increase sales and market share
- Private labeling will continue to be a new source of revenue for retailers
- Catalog retailing or "non-store" retailing will continue to grow substantially
- International expansion will offer new growth opportunities for mature retail companies

- Efficient Consumer Response (ECR) techniques will cut margins and allow grocers to compete against warehouse clubs and discount stores
- Retailers are getting ready for the information superhighway

For many years retailers have recognized information technology (IT) as one of the keys for improved sales and productivity performance, and for increasing speed and efficiency at corporate offices and at the store level. But most importantly, information technology has facilitated such vital inventory management activities as merchandise planning, allocation, and replenishment.

Today IT is facilitating new retail business processes and key technical trends. These technical trends include:

- More outsourcing will occur in the retail industry
- There will be rapid growth in client/server technology
- POS equipment and POS payment systems will continue to be implemented
- Computer-based merchandise systems using EDI and Quick Response technologies will continue to be implemented
- Virtual home/electronic shopping will emerge as an alternative merchandising distribution channel
- Virtual inventory will dramatically cut costs and increase sales
- Executive decision support systems for retail sales will abound
- Retailers will cut communications costs by implementing LANs, WANs, and satellite communications
- As retailers go international, more importing systems will be installed
- More telemarketing systems will be implemented to support catalog merchandising

- Massively parallel processors will proliferate the retail market, as electronic shopping emerges as an attractive alternative merchandising channel.

The major information system issues which will be driving retail growth in the next two years include:

- Networking
- User Interface/Training
- Efficiency
- Business improvement
- Accurate information
- Cost improvement
- Open systems migration

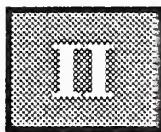
As a result of these business and technical issues and trends, the retail sales markets expenditures for information service will grow from \$3.1 billion in 1994 to almost \$6.4 billion in 1999—a compound annual growth rate of 16%.

E

Related Reports

Other INPUT reports that may interest the reader include:

- *Client/Server Application Trends—Retail Trade*
- *Wholesale Distribution, 1993-1998*
- *Electronic Commerce in Retail and Wholesale Distribution*
- *The Electronic Catalog Market*
- *European Software and Service Market, 1992-1997, Distribution Sector*



Retail Business Trends

A Retail Market Overview

Although sales and earnings growth have been unfavorable in the retail industry in the period 1990 through 1992, a good rate of growth in sales increase emerged in late 1993 and early 1994, because retailers have adopted effective competitive countermeasures including: downsizing and consolidation; merchandise mix changes; more consumer services; greater use of advanced technologies (e.g., quick response merchandising, EDI, etc.); alternative methods of retailing (e.g., catalogs & telemarketing; kiosks, electronic shopping, etc.); and major retailers are expanding internationally.

According to Alex Brown & Sons, Inc., annual retail sales grew 4.2% in December 1993, and they estimate sales growth to either remain the same or grow another 1-2% in the first few months of 1994. Catalog retailers such as Spiegel, Lands' End, and Micro Warehouse sales have been up 25-30% compared to this time in 1993.

Specialty stores such as Starbucks, Sunglass Hut International, Office Depot, and Petsmart, Inc. have all shown a 7.5% growth in sales in the last quarter of 1993. However, overall performance across the group seemed driven more by company-specific phenomena than by the rising tide of the overall economy.

However, not all sales results have been positive. Wholesalers and warehouse retailers showed flat or negative sales results due to consolidation and increased competition with specialty retailers. Most warehouse retailers such as Price/Costco continue to experience sluggish sales performance.

Department store sales increased over 20% from 1988 to 1993 according to Census Bureau data. But despite this growth in sales volume, department stores lost market share to discount stores, warehouse clubs, and specialty apparel shops.

Looking ahead, a continuation of strong real growth plus increased consumer confidence (see Exhibit II-1) and buying power is expected to help fuel retail sales.

As noted by the Food Institute, consumer confidence is gaining in most regions of the United States except for the mid-Atlantic and Pacific, areas hit hardest by the recent recession.

Exhibit II-1

Consumer Confidence by Region
(For the Period Nov 93 - Jan 94 versus Nov 92 - Jan 93)

U.S. Region	Consumer Confidence (Percent)
Mountain	Up 20.9
E. South Central	Up 16.8
W. North Central	Up 15.7
South Atlantic	Up 13.4
E. North Central	Up 10.8
W. South Central	Up 5.4
New England	Up 4.4
Pacific	Down 3.9
Middle Atlantic	Down 15.6

Source: The Food Institute

B**Business Trends**

The following outlines some of the key business trends INPUT believes are shaping the retail industry for the next few years. These trends indicate that the future of retailing will revolve around improved business processes, better cooperation among partners and suppliers, and, most importantly, providing better customer service.

1. Large Retailers are Diminishing and Consolidating

In North America, large retailers are diminishing in numbers, but the survivors such as Wal-Mart, Price Club, Supervalu, and Kroger are expanding. There is increasing consolidation of companies such as Price Club and Costco. It is estimated that, at an extreme, fifty to seventy percent of the department store industry will not survive. However, the remaining will find alternative ways of merchandising in order to be successful (e.g., catalogs, telemarketing, electronic home shopping, event planning, etc.).

2. Aligning IT and Corporate Goals Through Strategic Planning and Business Process Re-engineering

Retailers are beginning to take a process view of their business, rather than focus on cost centers and cost reduction. Today a successful business process reengineering effort integrates processes, people, and technology and aligns them with consumer needs. Strategic planning, and re-engineering has to do with survival. In the 1990s U.S. retailers have hit the wall of a mature economy. Consumers are more selective in their buying, and retail specialty stores are increasing. Business process re-engineering is designed to achieve two things in retailing: lower operating costs, and: re-deploy resources into services that will improve both sales and return on investment.

One of the most important re-engineering targets in retailing is "merchandising". Technology is needed for decision making and planning, as well as logistics and physical movement of merchandise. Non-store merchandising (e.g., electronic shopping, virtual inventory, catalogs, etc.) is totally changing the cost structure in many retail segments. There are a number of department store chains and supermarket chains where re-engineering of fundamental business processes and aligning technology and corporate goals are going to be necessary for not only survival in the 1990s, but also to grow and prosper in a mature economy.

3. Lowering Employee 'Turnover' is a Main Goal of Retailers

According to Andersen Consulting, CEOs of major retailing establishments are making every effort to reduce employee

turnovers. They cite major studies to back-up their claims. These include:

- (1) Coca Cola Retailing Council Study. Seventy-four percent (74%) of CEOs reported that high turnover contributed to a lower level of quality of customer service.
- (2) Cornell University Study. Thirty (30) retailers said they spend over 50% of net income to support the costs related to employee turnovers.
- (3) Retail Learning Systems. They report that a 5% increase in employee retention leads to 25-85% increase in productivity.

4. Major PC Manufacturers Are Now Marketing Through Consumer Retailers

Major PC Manufacturers which had long shunned the consumer retail market, are now gravitating towards the consumer market's vast growth potential. Dell, Packard Bell, and now Toshiba, Epson, Compaq and IBM are all marketing their products in warehouse clubs, office products superstores, consumer electronic stores, and the traditional computer stores. These companies are now targeting the small office/home office market, where users are more likely to purchase portable PCs at retail outlets. It is estimated that about 50% of all PCs will be sold through the consumer market in 1994. According to one estimate the small office/home office market will grow to \$14.1 billion in 1996, up from \$10.2 billion in 1992.

5. Office Products Superstores are Gaining Market-Share

Office products superstore chains emerged just six years go, and since that time have achieved important market-share growth at the expense of less-efficient independent dealers. Thus far, these gains have been concentrated in the small business segment of the market, where price sensitivity is most pronounced and competition relatively weak. However, looking ahead, these office products superstores will be targeting medium sized businesses and larger firms. The commercial market for office products presently exceeds \$65 billion, nearly double the size of the small business market. Companies such as Office Depot, Office Maxx (a division of K-Mart), and Staples will be targeting this highly lucrative large commercial market.

6. Children's Retail Business is Booming

Due to the "Yuppie" generation having children well into their 30s and 40s, the children's retail business is growing by leaps and bounds. Many children's chains have emerged in the last two years, such as Kids R Us Children's Clothing stores, The GAP for Kids clothing stores, and Gymboree, to name just a few. Positive demographics have helped pave the way for children's goods. As noted in Exhibit II-2, with some 54 million children under the age of 14 in the U.S., 64 million children under the age of 14 in Europe, and 25 million children under the age of 14 in Japan, the children's retail business is one of the largest vertical retail markets in the world.

Exhibit II-2

Children Under the Age of 14

Country/Region	Millions
Europe	64
United States	54
Japan	25
Total	143

7. Retail Entrepreneurs Will Continue to Emerge

With the growth of specialty stores, consumers being selective with their buying dollars, and department stores diminishing, the 1990s is the time for retail entrepreneurs to enter the retail market. INPUT predicts that retail emerging businesses will grow and prosper in numbers in the next few years.

8. Retailing Through Alternative Channels

As mentioned earlier, retailers—especially department stores—are diminishing in number. In order to survive, many department stores will have to find alternative retail distribution channels to merchandise their products. INPUT believes the following four retail channels of distribution will emerge as significant alternatives in the next few years.

a. Virtual Home/Electronic Shopping

Virtual home/electronic shopping is retailing's new frontier, a \$4 billion business that retailers expect will grow explosively. Through electronic shopping, department stores can reach a vast audience without the huge overhead of real estate, stores and labor. For example:

- **Macy's** has announced "TV Macy's" a 24 hour channel scheduled for launch in the fall of 1994. Other retailers are taking advantage of such existing resources as the QVC network and Informercials.
- **Saks Fifth Avenue, Marshall Fields and Bloomingdale's** have recently sold merchandise on "NBC Direct".
- **Nordstrom** has announced plans to develop an "interactive" shopping service using digital technology.
- **Spiegel** has announced a joint venture with Time Warner to develop a catalog/cable TV channel.
- **Time Warner and US West**, the regional telephone company, are collaborating to develop an interactive television system.
- **Winn-Dixie** has announced a joint agreement with Time Warner and Shopper Vision, a retail space management company, to develop a cable-delivered, interactive, grocery home shopping service. Customers will be able to shop by interacting with a three-dimensional supermarket store on their television screens. They will be able to view store shelves and displays, select products to view up close and rotate products 360 degrees to read the entire package, including ingredients and directions.

Home/electronic shopping will accelerate retail "interactive" shopping and allow consumers to request information and place orders using TV sets, PCs, FAX, telephones, and personal communication devices (e.g., Apple's Newton). Just as technology allowed banking via PC, telephone, or ATM machines in the 1980s, consumers in the 1990s are (or will be) able to shop anywhere and anytime.

b. Kiosks

Kiosks are springing up in public places, including malls, and inside department stores, for consumers to order, pay for and have specialized merchandise delivered. An example of this innovative approach to merchandising is Florsheim Shoes. Rather than have a shoe concession in a department store, or have a shoe store stocked with merchandise, a consumer can browse through pages of merchandise, order shoes, and pay for merchandise directly through kiosks placed in strategic locations.

c. Event Merchandising

Retailers such as Carson, Perry, Scott in Chicago and Lens Crafters are selling their merchandise at special events. For example, Carson, Perry, Scott holds "Dress for Success" special events on college campuses for seniors getting ready to enter the job market, and are interviewing for jobs. Lens Crafters sets up booths and tables to sell sunglasses at sporting events, such as tennis tournaments.

d. Catalogs and Telemarketing

Department store chains and specialty store chains are increasing their sales through heavy catalog and telemarketing efforts. They view this as an alternative merchandise channel for their chain. Carter, Hawley, Hale and Macy's have increased their catalog sales in the last year and will continue to expand this channel for optimal market penetration.

9. Customer Service—The Key to Successful Retailing

More and more retailers are making every attempt to get to know their customers, their needs, wants, etc. The successful retailers are already providing good customer service, but are now using database marketing systems, capturing demographic information on customers, and developing customer loyalty programs in order to get to know their customers and target their needs. Retailers now have the capability to track what the individual customer has bought, and target these customers with merchandise they most probably would buy, provide discount incentives, and provide special services which will bring the customer back into the store.

Successful grocery/supermarket chains, have always provided extra services to entice customers to remain in or use their stores.

For instance, they provide extra services such as alternative methods of payment (debit, credit, check, and cash); utility payment services; postal services; equipment rental; catering; international take-out foods; shopping bag loading service and video rental.

Several department store chains are making "Preferred Customer Programs" the cornerstone of their customer services strategy to increase sales and capture more market share. For example, Neiman Marcus pioneered a preferred customer program called "InCircle" in 1984. The program is geared to customers spending more than \$3,000 a year, and in 1990, they launched a second program to reach customers who spend less than \$3,000 a year, but are willing to pay a \$50 membership fee.

For most retailers, frequent customer programs are relatively new, but successful. For example, the "Sears Best Customer" program, which debuted in 1991, has been linked directly to measurable sales increases. Macy's is seeing results with its "President's Club", which offers members free alterations, free delivery, free gift wrap, valet parking, and advanced promotional material, among other perks. Saks Fifth Avenue conducted focus groups before it launched the "Saks First" membership club in 1992.

In addition to frequent customer programs, retailers are also adding a variety of amenities to keep customers in the store longer and to encourage return trips. Craig Hamilton of Andersen Consulting, as quoted in Chain Store Age Executive (March 1994) said "The value of pleasing a customer is more important than cost. Money spent in research and customer services will return to the organization in significantly increased sales."

10. Database Marketing and Consumer Information

Retailers are developing customer databases where they can track and profile customers, analyze and monitor shopping patterns, target customers with direct mail, and provide incentives and services, such as "electronic" coupons, merchandise awards and cash rebates. These database marketing systems enable retailers to categorize and target their customers demographically and more narrowly, and substantially reduce advertising and direct mail costs. Catherine's Stores Corporation, a \$170 million Memphis-based retailer, has increased sales per mailer from

\$3.67 to \$6.13, a 67% increase. They have also reduced their advertising costs by \$58,000 per year, through the use of the database marketing system they installed this past year. Vons Supermarket chain in Southern California has increased sales through their Frequent Shopper System by providing their Frequent Shopper customers with electronic coupons, cash rebates, and merchandise awards.

11. Private Labeling

Private labeling will continue to be a new source of revenue for retailers. It builds loyalty and a following of customers, increases margins, and provides another distribution channel for its products. The Limited, The Gap, and Casual Corner have all been successful at pioneering private label clothing. Loblaw, a Canadian supermarket chain, developed a private label of foods called "President's Choice" and has had great success with its private label "President's Choice Chocolate Cookies". Loblaw is now selling its President's Choice Chocolate Cookies in other competing supermarket chains, due to consumer demand. In effect, Loblaw has been able to successfully add another merchandising distribution channel for one of its private label products.

12. Catalog Retailing (or "Non-Store" Operators) Will Continue to Grow Substantially

Catalog retailers continue to grow and do well. Powerful industry trends continue to drive this growth for all catalogers. Catalog companies are well positioned for emerging "electronic" forms of retail distribution (e.g., electronic shopping, kiosks, etc.). Spiegel has announced a joint venture with Time Warner to develop a catalog/cable TV channel. Lands' End is a participant in the Sky-Mall mail order shopping from seat-back telephones in various commercial airlines. Huge customer files and applicable database expertise, efficient fulfillment infrastructure and the ability to tap horizontal and vertical markets are defining characteristics of the most attractive participants in the \$80 billion catalog retailing industry.

With access to capital and, in many cases, already formidable balance sheet strength, large publicly traded catalog retailers are consolidating. Lands's End acquired Territory Ahead; Spiegel

acquired New Hampton; and Hanover Direct purchase the Company Store, Gumps, and Tweeds.

Catalog companies are also growing by internal horizontal growth. For example, "Micro Warehouse," which markets Macintosh software, is expanding horizontally by offering IBM compatible software, CD-ROM, data communications and computer supplies. Estimates are that they will grow another 30% over the next one to two years. Viking Office Products has expanded its office supplies to include paper, furniture, computer supplies, printing, and, most recently, warehouse and maintenance supplies.

13. Growing Enthusiasm for International Expansion

Numerous major U.S. retailers, such as Woolworth, K-Mart, Toys R Us, and Wal-Mart, are now operating in at least one other country. This trend appears to be growing, since many mature companies have recognized they can no longer grow at an acceptable rate in their own countries and must look to foreign markets. The passing of the North American Free Trade Agreement (NAFTA) has removed investment barriers and liberalized trucking and data communications for U.S. retailers to enter the Canadian and Mexican markets. Retailers are also noting that consumer spending in the 90s is not likely to see other growth at the level it saw in the 80s, and as a result, many more U.S. retailers are looking for opportunities in other consumption-oriented markets. Retailers are also getting technically ready with "importing systems" which provide paperwork reduction and the infrastructure to enable just-in-time importing. Retailers who do not install importing systems are outsourcing the importing process to companies such as GE Information Services, who literally have the technology structure and people available to facilitate the importing business process in every major country, on every major continent in the world.

14. Growing Interest in Efficient Consumer Response (ECR) Techniques

Efficient Consumer Response (ECR) is the new business process of improved techniques which enable retailers, suppliers and manufacturers to remove non-value processes for the benefit of the consumer. It is basically a sharing of business information and technical practices, and is used for achieving just-in-time

(JIT) techniques, to slash stock levels, and speed up distribution for greater efficiency. It also allows retail companies to access information both from within its own industry (suppliers, manufacturers, wholesalers, etc.) and from other industries. For example, a retailer of baby products would have access to birthrate statistics, and this information could be shared by car companies, for the design new child-oriented car seats.

ECR was born in early 1993 by five retailing and manufacturing associations. It is supported by supermarkets including Kroger, Safeway, and Shaws, and suppliers including Coca-Cola, Kraft, General Foods and Proctor and Gamble. The driving force is the U.S. supermarkets' growing alarm at losing business to discount chains such as Wal-Mart and warehouse clubs such as Price/Costco, which charge 10-15% less for many grocery lines.

While U.S. supermarkets have installed electronic POS scanners, and POS payment systems, (debit, credit, check authorization), they have used them mainly to speed up check-out transactions, cut down on bad check losses, and provide service to their customers, rather than to generate information about their business or manage it better. Furthermore, their relations with suppliers remain antagonistic partly because U.S. food and household goods manufacturers have not faced the competitive spur of cheap imports which prompted makers of textiles, toys, and consumer electronics goods to cooperate closely with chains such as Wal-Mart. Things have been made worse by a uniquely American system of short-term promotional discounts on manufacturer's list prices. This encourages bargain hunting supermarkets to purchase as much as three months stock at a time and store it in warehouses.

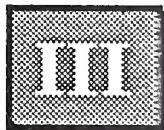
The ultimate goal of ECR is to allow the retailer to cut prices as much as 10-12% and to compete effectively with such large discount chains as Wal-Mart. These lower prices would be the result of superior process productivity. With ECR, retailers would see short-term promotional discounts in manufacturer's list prices eliminated. ECR would replace promotional discounts with industry-wide efforts by retailers, wholesalers and manufacturers to integrate the supply chain by installing advanced electronic systems and sharing information about sales, orders, production schedules and payments. Kurt Salmon, an industry expert, estimates ECR could cut stock levels by 37% and

reduce the time taken by a typical grocery product to move from factory gate to check-out counter from 104 days to 61 days.

ECR's biggest obstacle is not technology, which is already widely used in other industries, but getting retailers, suppliers, and manufacturers to behave as partners, not adversaries. ECR empowers the retailers, suppliers, and manufacturers to change from a "push" approach to retailing, which relies on putting products in a warehouse and hoping they will sell, to one where the industry is pulled forward by "consumer demand".

15. Retailers are Getting Ready for the Information Superhighway

Although most retailers are not boldly embracing this business and technical opportunity, they are getting ready for the technical capability. They view this technology as a future distribution channel, and are preparing for it. As mentioned earlier, retailers, especially department store retailers are in survival mode, and are boldly implementing alternative methods of merchandising, including "electronic" shopping. Macy's, Saks Fifth Avenue, Marshall Fields, and Nordstrom are experimenting with electronic shopping, in hopes of being major partners in the information superhighway.



Technology Trends

A

Overview

For many years, retailers have recognized technology as one of the keys for improved performance in sales productivity, for increasing speed and efficiency in the corporate offices and at the store level. Most importantly, technology has facilitated such vital inventory management activities as merchandise planning, allocation, and replenishment.

Today, technology is facilitating new retail business processes and giving way to new retail concepts of "alternate sources of merchandising", new approaches to product delivery, and new ways for providing customer payment alternatives. The following is a summary of some of the key trends which INPUT believes will be shaping IT development and implementation in the next few years.

B

Retail Technology Trends

1. Outsourcing

Outsourcing continues to be a viable approach to retail IT management. It is estimated that 35% of retailers are outsourcing at least one system function today, and plan to continue to outsource new development. INPUT believes that outsourcing will become increasingly popular as retail companies find that they cannot develop innovative technology solutions on their own, and within the time requirements needed to be competitive.

2. Rapid Growth in Client/Server Technology

Today, 85% of retail IT systems are primarily implemented in a mainframe/minicomputer environment with only 10% of retailers developing systems in a client/server PC or client/server network environment. However, according to INPUT's survey, radical changes will occur in the retail IT system development. It is estimated in the next three to five years approximately 50% of retailers will develop systems in a client/server PC or workstation environment; approximately 33% will continue to develop IT systems on a mainframe/minicomputer environment; and approximately 17% will develop client/server systems on PC-network environment. Retailers are moving from mainframe/minicomputer platforms due to many factors, including: better and easy to use client/server software development tools; standard, cost effective hardware; and the ease of adding numerous applications without replacing computer hardware.

3. POS Equipment and POS Payment Systems

POS terminals and devices presently account for more than 50% of store IT expenditures in the retail industry, with supermarket/grocery stores recording a survey high of 65%, and department stores at 58%. Supermarkets/grocery stores will increase their installation of POS equipment, and many also plan to install check authorization and collection systems, direct debit and credit systems, ACH EFT debit systems, video rental systems, and frequent shopper "electronic" coupon systems.

Supermarket/grocery chains project a dramatic increase of 10-30% in spending for these POS systems over the next three years. Retailers also want to: provide for multiple methods for customers to pay for goods; cut down on bad check losses; and provide incentives for customers to shop in their stores.

4. Computer-Based Integrated Merchandise Systems using EDI and Quick Response Technologies

More than 50% of retailers are using computer-based merchandise allocation systems and have aggressively integrated Quick Response technologies (e.g., EDI) with computer-based merchandise allocation systems. INPUT anticipates at least another 30-35% increase in integrated merchandise allocation systems over the next few years. The reason for this increase is

that retailers who are using this technology are reporting a dramatic increase in inventory turns, increased sales, an increase in customer satisfaction, reduction in inventory levels, a reduction in operating costs, a reduction in interstore transfers, and a reduction in markdowns.

Most retailers interviewed are integrating, or are planning to integrate, the Quick Response technology applications noted in Exhibit III-1 with their merchandise allocation system within the next two years.

Exhibit III-1

Popular Quick Response Applications

- SKU-level transaction processing system
- POS scanning
- Shipping container marking
- Automated receiving systems
- Advanced replenishment systems
- Shelf space allocation systems
- Automated price look-up at POS

5. Virtual Home/Electronic Shopping

Virtual Home/Electronic Shopping is retailing's new frontier. It is now a \$4 billion business and retailers expect it grow much larger. Macy's has announced "TV Macy's", a 24-hour channel scheduled for launch in the fall of 1994. Other retailers are taking advantage of such existing channels as the QVC Network and Informercials. Saks Fifth Avenue, Marshall Fields, and Bloomingdale's have recently sold merchandise on "NBC Direct". Nordstrom has announced plans to develop an "interactive shopping" service using digital technology. Time Warner and US West, the regional telephone company, have formed a joint venture to develop an interactive television system. It will allow consumers to request information and place orders using their TV sets. Just as technology allowed banking via PC, phone, or ATM machines in the 1980s, consumers in the 1990s will be able to shop in their own time and space—and when, where and for whatever they want.

6. Virtual Inventory

Virtual inventory can be defined as the elimination of physical inventory through the use of electronic storage and delivery. The economics of the 1990s is driving demand towards virtual inventory technology. Egghead Software has developed a new virtual inventory service called Egghead Express, which is designed to better serve the company's corporate customers, and to cut the costs of order processing. Egghead's corporate customers can order software through its electronic catalog where customers can simply "point and click" to place an order. It is an environment in which there is no human intervention until a pick list is generated in the warehouse. By doing away with paper purchase orders, this system dramatically cuts the cost of preparing a purchase order transaction.

Blockbuster Entertainment has also developed a virtual inventory system called "Soundsational". This system was a jointly developed by Blockbuster and IBM. It allows network distribution of electronic entertainment products, such as CDs, videotapes, and audiotapes, directly to Blockbuster's stores, eliminating the need for stores to carry physical inventory. The customer will have access to almost any entertainment product they want.

The system works by having a customer use a touch screen at a kiosk. The customer can both identify and preview products (CDs, video tapes, and audio tapes). After a customer makes a choice, he or she will tell a clerk who will then order the product from a central computer using a PC. The host system will then transmit the audio and visual product to the store, where it will be "manufactured" (with packaging art work) in a few minutes. The system is currently being tested but will not be fully implemented until the technology is faster, licensing agreements are complete, and in-store equipment can manufacture and assemble products rapidly and economically. But the signs are there to see—such approaches to product delivery and sales virtually eliminate the need for the retailer to stock inventory.

Both Egghead and Blockbuster benefit from virtual inventory applications, with benefits that include improved inventory management, better customer satisfaction, and increased revenue and margins. The content providers benefit from fewer returns, access to their entire catalog, and new international opportunities.

7. Easy to Use Executive Decision Support Retail Systems and Sophisticated Architectures are Shaping the Retail Industry

New client/server and open systems with easy-to-use "Windows-like" user interfaces are increasingly being used by senior management. These easy to use ad hoc tools are now readily available. According to Michael Saylor, President and founder of MicroStrategy, Inc. a systems integration company in Wilmington, DE which markets high level decision support systems for the retail industry, senior executives of large companies (like K-Mart, Dayton-Hudson, Circuit City and Wal-Mart) are implementing and using decision support systems to do the following:

- (1) **Ad-Hoc Reporting** - (e.g., reports of various types, on demand)
- (2) **Ad-Hoc Analysis** - (e.g., calculate profitability, analyze promotions, analyze and calculate pricing, etc.)
- (3) **Automated Analysis** - use standard methodologies to analyze various business, merchandising, and promotional strategies
- (4) **Automated Decision Making** - permits event-driven decision making (e.g., detects advertising campaign without a product to ship, and flags 37 actions that must be taken for this business activity to be profitable and successful)

Large retailers run thousands of business experiments a day. For example, a large retailer can run an advertisement for one store which targets a specific ethnic group. If the advertising works, it can be used in 20 stores. Senior retail executives are now demanding and using this kind of enterprise decision support system to do this kind of analysis for inventory and merchandising, pricing decisions, labor scheduling for all the retail operations.

8. Retailers are Cutting Communications Costs by Implementing LANs, WANs Integrated Network Technologies and Satellite Communications

More and more retailers are providing sophisticated integrated network communications between stores and headquarter locations with new single leased line digital WAN

telecommunications technology. This multiplexing technology transmits not only data, but voice and fax simultaneously. With the consolidation of multiple lines, these systems greatly speed debit, credit and check authorization transactions at stores, and allow for inventory and order entry, using a single line.

Lechmere, a 24-store chain in Massachusetts is testing an integrated network communications systems in seven of its stores and plans to roll out the system in all its stores by the end of the year. They have already seen a substantial savings in communications costs, and expect to see a return on investment sooner than originally projected.

Melville Corporation, the Rye, New York-based parent company of Peoples Drug and Marshall's, is distributing information across multistore chains by employing satellite networks. Melville is presently installing the fourth largest VSAT network in the world, and the largest in the retail industry. They have the system installed in 1,500 of the 3,600 locations. The project is expected to cost about \$50 million. As a parent company for several disparate chains, Melville turned to satellite links because they could put one VSAT on the roof of a mall where they have 10 stores. (The company averages 3.5 stores per mall). Each store has a fiber-optic connection to the uplink which relays data to a communications hub in Woonsocket, R.I., and provides video feeds, credit checks, video-conferencing, and even in-store music.

9. Increased Development and Installation of Store Systems Running on Powerful Low Cost Store Platforms

As store platforms become more open and powerful with UNIX RISC-based technology, retailers are adding more and more systems to manage the operations of each store. Price lookup, verification, and changing systems are now integrated into register POS systems and the store platform computer, which is often networked to the host computer at corporate headquarters. Systems such as POS payment systems (debit, credit, check authorization), shelf planning, energy monitoring systems, video rental systems, electronic shelf labeling systems, customer traffic management systems, direct store delivery systems, and automated check-out systems (to name a few) are now all helping retailers to be cost-efficient and more profitable.

New products include *Shopper Trak*—a radar-like system that counts incoming store traffic and calculates the number of checkstands needed to be open for efficient and fast customer movement. The system also takes data from the store's POS system, creates a conversion rate which helps retailers figure out how well they did turning browsers into buyers, and the system also enables retailers to determine optimum staff-to-consumer ratios. It appears that with its labor saving potential, the system can pay for itself within a year. K-Mart, Pier 1 Imports and Saks Fifth Avenue are testing this system and have reported good results.

10. Increased Installation of Importing Systems

As mentioned earlier, many major retailers (in all the retail segments) have opened, or are planning to open, stores overseas. But "going global" is no easy task. For U.S. retailers, trade with foreign manufacturers requires careful coordination of systems and documentation between banks, shippers, consolidators, agents, custom brokers and government agencies. Many U.S. companies, including K-Mart, J.C. Penny, T.J. Maxx, Caldor and Venture Stores, have installed importing systems to give them control over the entire spectrum of importing transactions—from purchase orders to receipt of goods. One such system, developed by IMC Systems Group, Inc., of Waltham, Massachusetts, is being used by all of the chain stores noted above. The IMC system is both PC- and UNIX-based and enables retailers to reduce inventory costs, cut cycle times, achieve duty cost reductions and cut paperwork more than 50%. But most importantly, it allows the infrastructure to enable JIT merchandising and provides strong controls for imports.

11. Development and Implementation of Telemarketing Systems to Support Catalog Retailing

As more and more retailers, especially department stores, are adding catalog sales as part of their merchandising channel strategy, on-line telemarketing systems are being implemented to support this alternative retailing channel. For example 800-Flowers has successfully implemented telemarketing software and provides tighter communication links between its telecenter in Worcester, Massachusetts, and its headquarters and telecenter in Westbury, New York. They attribute their recent high growth in sales and profitability primarily to the company's customized

telemarketing software and systems, and also to clever and effective advertising.

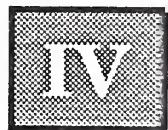
As an operating base, they have replaced an IBM AS/400 computer with NCR 3450 UNIX-based servers. This change allows portability of applications between the two telemarketing locations, thus enabling them to share a common database through a T1 WAN link. This, in turn, allows 800-Flowers to have better control of its data and therefore provide better service to its customers. For example, during certain holidays, they can improve order processing by 10 times, by adding dumb terminals linked to the UNIX hosts. With the UNIX/NCR equipment, 800-Flowers can support 350 agents in the Westbury telecenter, and up to 500 agents in Worcester-resources capable of handling high sales volumes during the peak seasonal periods.

12. Massively Parallel Processors

As the super information highway, electronic shopping, and consumer oriented electronic services are provided electronically (e.g., airline reservations, stock purchases and stock transfers transactions.) and become more popular, the massively parallel processors will become viable alternatives for processing the growing volumes of data.

13. Summary

Although there is stiff economic competition in the retail industry today, retailers are now more committed than ever to technology advancement. INPUT predicts that retail technology is entering a time of accelerated growth and radical change, in order for retailers to keep up with the demands and needs of customers and the challenges in the industry. Today, technology is no longer just a tool to keep pace with change and growth, it is a force driving change and growth throughout the retail industry.



Information Systems Environment

A

Leading IS Issues and User Concerns

When asked to identify the major issues relevant to IS in the next two years, the retailers and vendors cited the following issues, noted in order of importance:

- Networking
- User Interface/Training
- Technical Expertise
- Efficiency
- Business Improvement
- Accurate Information
- Cost
- Open Systems Migration

Each issue is discussed in detail in the sections which follow:

1. Networking

Retailers need networks, WANs and LANs which work easily and reliably. Retailers expressed concern that some POS systems can be unreliable and hard to use. Networking is also a prime concern of accounting departments and merchandising or buying departments, where EDI is being added to their systems.

Linking corporate headquarters to stores using a WAN is a key priority for retailers. Several large chains use satellite transmission between sites. Ensuring WANs are supported by applications software is a prime concern. Many retailers are interested in reducing the paperwork between stores and headquarters using networking.

Retailers are also concerned about LANs. These are used to connect store floors to back offices where store platforms and store systems are located. They need to be simple to administer, reliable and must provide fast response when linked to POS equipment.

2. User Interface and Training

Almost one-third of the retailers interviewed mentioned they either need better user interfaces to their systems or better user training. A key concern of retailers is high personnel turnover among stores and lack of money to train them. Hence, any store system must be as easy to use as a cash register.

Retailers also want simple interfaces to inventory systems and merchandising systems. They are requesting Windows-like interfaces. These retail systems are very complex, but training buyers, store personnel and warehouse personnel is critical for those retailers who have implemented merchandising, inventory, and "Quick Response" systems. David Carlson, Senior Vice President of Corporate IS at K-Mart, stresses simplified systems, and has said "We've spent a lot of time on things like icon design and graphics to make our systems more usable".

Customer databases that show customer demographics, purchase patterns and buyer histories (Frequent Shopper Systems) are another area where user interfaces can be improved. Shelf planning systems also require a simple user interfaces.

3. Technical Expertise

More than 25% of respondents are concerned about keeping up with technology. This concern is becoming more prevalent among retailers than among other market segments. Being aware of how competitors and others in the industry use technology is another concern.

4. Efficiency

Many retailers are concerned with making their business more responsive to customer demand and changing market conditions. There are several areas where retailers want to speed up operations:

- Distribution management
- Payroll
- Ordering
- In-store check authorization and payment methods (e.g., credit, debit, and check)

Retailers are particularly interested in installing merchandise information systems using EDI technology and Quick Response Systems. Several stores are interested in improving their personnel scheduling with time and attendance systems.

5. Business Improvement

Several respondents are interested in using systems to improve their business. They want:

- Merchandise Information Systems using EDI
- Human resource systems to manage employee information and benefits
- Direct Store Delivery Systems (DSD)
- Shelf Planning Systems
- Price look-up, verification and price changing systems, integrated into the cash register
- Senior-level Decision Support Systems

6. Accurate Information

Information is required for several store functions. In particular:

- Orders must be correctly entered into a data entry system
- Pricing must be accurate in POS systems
- Store managers and corporate executives need accurate reports from the finance, inventory, and merchandising departments
- Human resources data must be available to those who need it
- Consumer research database information is required to support marketing strategies

Stores are particularly interested in getting timely and accurate sales reports to corporate offices. One company is decentralizing its human resources database so job applicants and new hires can enter data at its local store, rather than sending a form to a central personnel office.

Time and attendance tracking is another area where accurate information is essential. Some stores are interested in improving their time recording along with tracking other employee related performance factors, in order to create incentive pay schemes.

7. Cost

Most retailers are interested in substituting technology for labor, thereby reducing payroll and burden costs. Very few retailers explicitly named systems cost as an issue. However, nearly all the retailers interviewed insisted on seeing a return on investment for any new systems installed within one to two years.

8. Open Systems Migration

More than half of the retailers interviewed mentioned migrating to open systems as a concern. They are worried about moving large legacy mainframe data to client/server platforms. They hope the migration software tools for this effort are available, so they will not have to re-engineer, or replace all or part of their existing systems. One retailer, for instance, is concerned with

porting code to a UNIX platform, and wants this operating system to be a stable environment for developers.

9. Other IS Issues

Systems integration, networking and communications are also concerns, and several personnel issues were raised:

- Growing chains want to be able to expand with minimum systems impact as new staff is hired.
- Some large chains are concerned about layoffs and do not want to cut jobs
- Retaining mainframe programmers want to work in a client/server PC networked environment.

B

Anticipated Changes in the Systems Environment

The retailers and vendors interviewed provided information on specific changes in their systems environment over the next two years. Responses fell into three categories, each of which is addressed in the sections which follow:

1. Upgrades/Re-engineering

Two-thirds of the retailers and vendors anticipate they will be upgrading systems in the next two years and re-engineering both systems and business processes. Of those wanting to up-grade, almost all are moving to client/server systems.

2. Increased Standardization

Movement towards increased standardization on platforms and operating system environment was predicted, and asked for by almost all the respondents. Retailers typically use more mature technology than other industries, but both retailers and vendors are seeing significant changes to the more contemporary environments of open systems and standardization in platforms.

3. Migration to Client/Server Platforms

Every retailer interviewed said they were moving to client/server environments or were planning to adopt client/server migration strategies over the next two years. They especially want to move key applications, such as customer databases and merchandise information systems, to client/server technology.

C

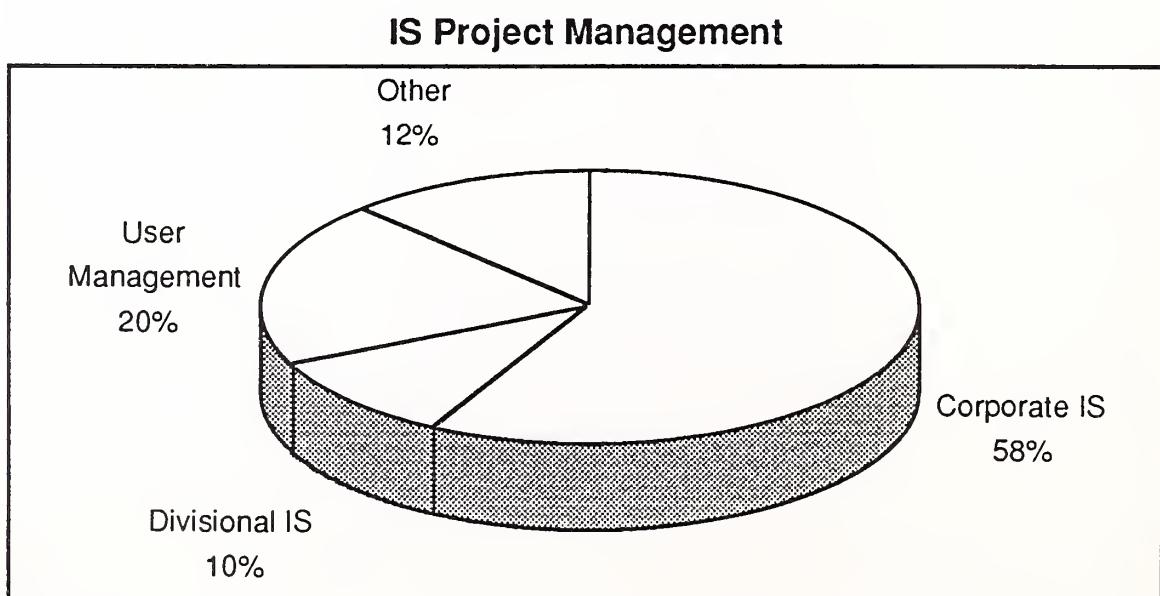
Information Systems (IS) Project Management

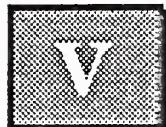
Respondents were asked who was managing the IS projects. Corporate IS was the project manager for more than half the applications in the retail market. Corporate IS has more influence on retail systems than in many other industries. Many of the projects classified as managed by "other" were managed by a joint committee of IS and users. However, the "other" projects were also managed by outside systems integrators and consultants.

Twenty percent (20%) of the respondents indicated that project management was handled by user management. This is comparable to the manufacturing industries and much lower than the forty percent (40%) found in the banking and finance industry.

Ten percent (10%) of respondents indicated that project management was handled by divisional IS management.

Exhibit IV-1





Retail Application Case Studies

This chapter presents case studies based on interview's with three retailers. The retailers were selected because they demonstrate the diverse activities which characterize the retail market.

INPUT interviewed professionals at the following retailers:

- Alliance Stores - Discount accessories
- Bel Air Markets - Supermarket Chain (a subsidiary of Raley's)
- Fred Meyer - Superstore chain

Each company has a chain of stores through which products are sold. The first is an emerging chain of specialty apparel stores that is outsourcing its IT development and systems integration. The second is a supermarket chain recently acquired by a larger chain and uses HP and IBM computers. The third retailer is a large superstore chain retailer planning to replace IBM mainframes with RISC-based client/server workstations.

All three chains rely on internal IT resources and outside vendors, systems integrators, and consultants to develop and customize software to meet their needs. Each retailer is discussed in detail below.

Note that the type and scope of the information obtained from each interview varies from company to company. This is the result of INPUT's desire to allow each retailer to relate their experiences and plans in their own way, stressing what they felt to be the most important issues. INPUT's analysis is contained in the summary at the end of each case study.

A

Alliance Stores

1. General Information

Alliance Stores corporate headquarters is located at 711 Mission Street, Pasadena, California, 91030. The company is three years old and specializes in women's accessories. Presently, the company has 25 stores located throughout the country in various factory store discount malls. Alliance Stores plans to continue its expansion to 100 stores over the next five to ten years. The company sales in fiscal year 1992-93 was just over \$7 million. Each year in which Alliance Stores has been in business, it has doubled its sales. The interview was conducted with the founder and CEO of Alliance Stores, Robert Greening.

2. IS Structure

The IS function is centralized at the corporate headquarters, with a Director of IS, a data entry person, and a part time data entry person. Since the founding of the business, the company has implemented a merchandise information system (not using EDI); accounting systems; a sales audit system; a human resource system; and an electronic mail system. The development of these systems was outsourced to a small company, Data Strategies, which devotes 100% of its time to Alliance Stores. The heart of these systems are (1) the merchandise information systems and (2) the accounting systems. The two systems are not integrated. Data entry personnel have to input orders separately into both systems.

3. New Applications Which Will be Implemented in the Next Few Years

Alliance Stores plans to implement both LANs and WANs, a price look-up system, POS audit system, and a fully integrated EDI Quick Response System throughout all their stores. They also plan to fully integrate the merchandise information system and accounting systems, so they will have a perpetual inventory/replenishment ordering system. Alliance Stores plans to outsource this development effort during 1994. However, they have not chosen the systems integrator for the development and installation.

4. Client/Server Development

According to Robert Greening, Alliance plans to have all their applications running in a client/server environment by Spring 1994. Since Alliance Stores is a young company, they have had the luxury of developing systems from scratch in a client/server environment. Michael Greening, the CFO and IS Director, has managed this client/server development from the start by implementing corporate and store systems. He has been planning and upgrading the company systems with the goal of having robust, efficient systems which will accommodate a chain of 100 stores. Alliance stores will outsource all its development with selected systems integrators and specialized systems vendors for specific applications.

5. Hardware, Software and Networking

The company has fully used standard 486 PC clone hardware for all its applications at the corporate level and store system level. All the applications are running in a MS-DOS or Windows operating system environment. Dial-up lines are used with 9600 bps modems for the electronic mail system. As yet, no local area network or wide area network has been installed throughout the stores.

6. IS Budget

Alliance Stores has spent approximately \$200,000 annually for developing and maintaining its IS applications. They plan to spend 1% of total sales, per year, for maintaining and developing new systems, over the next few years.

7. Vendors Which Provide Computers, Development, Systems Integration, and Specific Applications

Exhibit V-1 summarizes the primary information services vendors used by Alliance for its IS activities, the products and services which they provide, and an estimate of significant strengths and weaknesses.

Exhibit V-1

Alliance: Information Services Vendors

Vendor	Product/Service	Strength/Weakness
(1) Data Strategies	Merchandise Information System	(1) Small enough so Alliance gets 100% of their attention (2) System specifications designed for Alliance Stores (3) They are not big enough to grow with Alliance Stores
(2) Retail Accounting Systems	Accounting Systems	(1) The software is very good, but not modifiable (2) Accounting software is not integrated into the merchandise information system
(3) ADP	Human Resource System	(1) Excellent System. Payroll is networked to ADP for employee payroll distribution
(4) MCI	Electronic Mail	(1) Excellent system. Provides total written communication between headquarters and stores. (2) As the chain grows, Alliance plans to continue using MCI Mail as their choice of an electronic mail system.

8. Application Trends

Alliance Stores sees EDI, bar code scanning, and home shopping as future applications in their niche of the retail market.

9. Applications Which Have Been the Biggest Success and Offer the Biggest Return on Investment

For Alliance Stores, MCI's electronic mail has been the biggest success. They have electronic mail fully installed in each store and at corporate headquarters. Alliance Stores uses electronic mail for reporting discrepancies, and for receiving vendor merchandise. Since Alliance Stores is a young company, it has not had any application failures. However, they are anxious to have their merchandise information system fully integrated with their other corporate applications, plus they want to fully use EDI technology to communicate, exchange, and document information with their vendors.

10. Summary

Alliance Stores is fully committed to information technology for its growth and expansion over the next few years, and the company

is fully committed to client/server technology for its rapid growth. However, they plan to completely outsource development for focused and rapid growth. Alliance Stores is also committed to fully using EDI technology for such vital inventory management activities as merchandise allocation, replenishment, and reporting. It sees the valuable role EDI plays in increasing inventory turns, sales, and customer satisfaction, and reducing inventory levels and operating costs. In summary, Alliance Stores sees that information technology is no longer just a tool for keeping place with its rapid growth and change, it is helping to drive corporate growth.

B

Bel Air Markets**1. General Information**

Bel Air Markets' corporate headquarters is located at 500 West Capital Avenue in West Sacramento, California 95605. The chain is 39 years old and was founded by the Wong family in 1955. The company presently has 18 stores located throughout the Sacramento area. The company sales in fiscal year 1992-93 were \$375 million. In 1992, Bel Air Markets was acquired by Raley's, a 60 store chain, located in the Sacramento, California and Reno, Nevada areas. Raley's does approximately \$1.35 billion in sales, at the present time. Although Bel Air was acquired, its operations are completely separate, except for a few centralized corporate functions which include finance and accounting, human resources, IS, advertising and buying functions. This survey was conducted with: Gordan Wong, Director of IS; Gordan Mack, Manager of Data Processing; and Terry Tremelling, Corporate Controller.

2. IS Structure

Presently, the Bel Air Markets IS organization is structured with a Director of IS, Manager of Data Processing, Store Systems Manager, Communications Manager, three programmers, PC Manager, and several data entry personnel. The Bel Air IS Director currently reports to the CIO at Raley's Stores. Since the acquisition, the focus of IS systems development has been to consolidate critical operational applications with Raley's

applications, and eliminate redundancy. Bel Air has traditionally developed applications in a UNIX microcomputer environment, whereas Raley's has traditionally developed applications in an IBM mainframe, VM environment. Both companies plan to continue, in the short run, this IS separation, except for critical operational applications. Bel Air and Raley's are just beginning to put together a five year plan to develop and re-engineer critical applications to function in a client/server environment.

3. IS Consolidation

Bel Air is about 85% completed with moving its accounting systems over to Raley's accounting systems. Raley's uses Millennium accounting software. Raley's, Bel Air Markets, and Savemart own their own warehouse called "SuperStore Industries". They are in the process of merging the inventory ordering systems with these three supermarket chains for use with their wholesale warehouse.

4. Applications Which were Implemented in the Last Three Years

In the last few years, Bel Air Markets has implemented a bakery warehouse ordering system, a Novell LAN, NCR 2127 cash registers, a check authorization and check collection systems, an ACH/EFT System, direct debit EFT System, a credit system, a video rental system, an electronic mail system, an energy monitoring system, and a computer-for-students system. They have installed Verifone POS terminals, store controllers, multiplexers, and leased telephone lines from each store to the corporate headquarters.

5. New Applications Which Will Be Implemented in the Next Few Years

Bel Air is presently implementing a labor scheduling system, and plans to implement a WAN to do EDI merchandise allocation systems, specifically a merchandise inventory/replenishment ordering system. This system will initially be implemented on the Raley's IBM mainframe, but will be moved to a client/server environment over the next five years. Bel Air also plans to implement a time and attendance system, shelf planning system, and a price-look-up-verification-and-price-changing system. These systems will be implemented on Bel Air's HP9000 platform.

Bel Air also plans to replace their store platforms (286 PC clones) with the IBM RS6000, so that both Raley's and Bel Air will have the same POS and computer equipment in each store.

6. Client Server Development

According to Gordan Wong, Bel Air plans to move all its POS payment systems applications to a client/server environment for both Bel Air Stores and Raley's Stores. Both chains agree the implementation of client/server technology will be their goal in the next five years, after they have reasonably consolidated their mission-critical applications. They also agree that they plan to outsource any new software development, and acquire new software, rather than develop internally. They also have plans to outsource much of their maintenance.

7. Hardware, Software, and Networking

Bel Air's goal over the next five years is to completely move to a client/server PC networking environment, and they plan to develop and re-engineer their systems from Raley's mainframe environment to a networked RS6000 environment. They plan to continue to use a LAN within corporate headquarters and implement a WAN for use between stores, corporate headquarters, their wholesale warehouse, and its suppliers.

8. IS Budget

Bel Air Markets spends approximately \$1 million annually for developing and maintaining its IS applications. They plan to spend 2-3% of total sales, per year, for maintaining and developing new systems, over the next few years. This IS budget is a completely separate budget from Raley's IS budget.

9. Key Vendors Which Provide Development, Systems Integration, and Specific Applications

Exhibit V-2 notes the primary information services vendors used by Bel Air for its IS activities, the products and services which they provide and an estimate of significant strengths and weaknesses.

Exhibit V-2

BelAir: Information Services Vendors

Vendor	Product/Service	Strength/Weakness
(1) Retail Profits, Inc.	(1) Check Authorization and Collection (2) ACH/EFT System (3) Direct Debit and Credit System (4) Video Rental System (5) Electronic Mail System	(1) Small enough so Bel Air gets 100% of their attention (2) System specifications designed for Bel Air Stores (3) Check Authorization and Collect. System saves chain millions of dollars annually (4) Software is elegant, bug-free, and modifiable
(2) NCR	(1) POS Cash Register System	(1) Excellent POS hardware, but expensive installation and maintenance
(3) BASS	(1) Price Look-up and Change System	(1) Very accurate software, and installation was fast and efficient (2) System is a great time saver

10. Application Trends

Bel Air foresees more EDI applications (for purchases and deliveries of merchandise) in their future installations. With EDI installations, Bel Air will be able to do away with the expensive, and time consuming paper trail, and dramatically reduce their transaction costs and errors which occur in present interchanges with their suppliers.

11. Applications Which Have Been the Biggest Successes and Applications Which Have Been the Biggest Failures

Bel Air Markets' check authorization and collection system has been their biggest success, along with their POS payment systems or (e.g., ACH/EFT; direct debit; and credit). These systems were designed and developed by Retail Profits, Inc. and have saved the chain millions of dollars annually in bad check losses, and have made the front-end of the stores run smoothly and efficiently. Bel Air's biggest failures are (1) outsourcing the development of a direct store delivery system. The delivery system was never completed and was abandoned at an undisclosed cost and (2) a POS lottery system. The POS lottery system was originally a success, due to the efforts of Retail Profits, Inc. that developed the system for the California State Lottery. However, once the

California State Lottery took over the maintenance of the system communication and card supply problems increased, state support did not meet Bel-Air needs, and this application was discontinued.

12. Summary

Although Bel Air is merging its UNIX microcomputer software applications with Raley's mainframe applications, they are fully committed to a PC-networked client/server environment for future development over the next few years. They plan to outsource most development for rapid and efficient implementation and they also plan to outsource most of the maintenance. Bel Air is committed to using EDI technology, especially for vital inventory management applications and smooth operations with its own wholesale warehouse and its suppliers. Bel Air has always been a pioneer technically. Over eighteen years ago, Bel Air was the first supermarket chain to implement scanning technology in Northern California, and six years ago, it was the first supermarket chain to implement EFT in the Northern California area. Much of Bel Air's success can be attributed to its being fully committed to Information Technology, excellent customer service, and strong management with foresight.

C

Fred Meyer

1. General Information

Fred Meyer's corporate headquarters is located at 3800 South East 22nd Avenue, Portland, Oregon 97242. The Company specializes in large "Super Stores", in which there are several stores under one roof. These stores include: a grocery supermarket; home improvement products and services; discount apparel; a jewelry store; record and small appliance stores; and other specialty stores. The chain operates 105 super stores and 20 to 25 stand alone jewelry stores. The company sales in fiscal year 1992 to 1993 was approximately \$2.8 billion. Most of the stores are located in the Portland, Oregon area with several located in the state of Washington, and two stores in California. During the last five years, Fred Meyer has shown a steady 5-10% increase in sales per

year. This survey was conducted with Jack DiGennaro, Store Systems Application Development Manager.

2. IS Structure

Presently, the Fred Meyer IS Organization is centralized with a CIO, Director of Network Services, a Director of Store Systems, and a Director of Administrative Services. The company has implemented: IBM 4680 registers in all stores; a WAN Spread Spectrum communications network; a direct store delivery system (DSD); a check authorization and collection system developed by IBM; a Quick Response EDI merchandise information system developed by PRJ Associates; a budgeting system; and an interim ordering system.

3. New Applications Which Will be Implemented in the Next Few Years

Fred Meyer plans to replace the IBM ES9000 mainframe with IBM client/server RS6000 computers at headquarters and RS6000 computers in each store. They also plan to continue implementing an EDI replenishment system with all their suppliers. At this time, about 25% of their suppliers are on the EDI replenishment system. Fred Meyer also plans to implement a warehouse management system and a full EFT, on-line debit and credit system. They also plan to implement an electronic pricing system, frequent shopper coupon system, and a home shopping system.

4. Client/Server Development

According to Jack DiGennaro, Fred Meyer is committed to client-server technology, and their goal is to have all their applications moved to a client/server environment over the next five years. They also plan to outsource 90% of new software development and system integration, rather than develop internally. PowerBuilder is the client/server software tool of choice for both re-engineering and new software development.

5. Hardware, Software, and Networking

Fred Meyer's goal over the next five years is to completely move to a client/server networking environment, and they plan to develop and re-engineer their systems from a mainframe environment to

a RS6000 environment. They plan to continue with a WAN for use between stores, corporate headquarters, wholesaler warehouses, and suppliers.

6. Key Vendors Which Provide Development, Systems Integration, and Specific Applications

Exhibit V-3 identifies the primary information services vendors used by Fred Meyer for its IS activities, the products and services which they provide, and an estimate of their strengths and weaknesses.

Exhibit V-3

Fred Myer: Information Services Vendors

Vendor	Product/Service	Strength/Weakness
(1) IBM	(1) 4680 Registers (2) Check Authorization and Collection	(1) Excellent POS hardware, but expensive installation & maintenance (2) Check authorization system fully integrated with registers.
(2) Symbol Technologies	(1) Spread Spectrum WAN	(1) Excellent WAN system. Will continue to use this WAN as their systems grow and change.
(3) PRJ Associates	(1) Quick Response, EDI Merchandise Information System	(1) Excellent software, fully integrated with IBM technology

7. Application Trends

Fred Meyer foresees more EDI applications for purchases and deliveries of merchandise and sharing information with its suppliers. They also see more customer service applications such as home shopping for services and frequent shopper coupon distribution systems as important strategic initiatives to keep and increase market share, and also to increase revenues.

8. Applications Which have Been the Biggest Successes and Applications Which Have Been the Biggest Failures

Fred Meyer's POS IBM 4380 Systems and their Shelf Space Audit System (SPA) have been their biggest successes. The POS 4380 Systems have provided everything they need at the front end of their stores, plus they have provided an easy environment in which to add additional applications which are fully integrated into the store systems environment. The Shelf Space Audit

System has been a great time and labor saver, but, most importantly, has dramatically decreased inaccurate replenishment of merchandise and inaccurate space allocation throughout the chain. Fred Meyer's most significant concern was their initial implementation (in each store) of an AS/400 for inventory control systems. Subsequent analysis showed that a more open system was required for many of the applications needed at the store level, and the AS/400s were replaced by UNIX-based RS6000s. The open systems architecture of the RS6000 both facilitates the implementation of current tasks, and also allows for future growth.

9. Summary

Fred Meyer is fully committed to information technology and client/server architecture for its development for the next five years, emphasizing focused, steady growth. They plan to outsource at least 90% of its development for the most rapid and efficient implementation. Fred Meyer is also committed to EDI technology, especially for its Quick Response merchandise information system and for efficient operations and information exchange with its wholesaler and suppliers. Fred Meyer sees "customer service" applications such as home shopping services and frequent shopper—coupon systems as the technology which will help them to increase their revenues, margins, and market share in the coming years.



Information Services Market Forecast

A.

Total IS Market Forecast

The 1994 edition of the U.S. Industrial Outlook estimates retail sales in 1993 totaled \$2,086 billion dollars. For the majority of U.S. retailers, INPUT estimates the IT expenditures for the retail market varies between .5% to 1.5% of total sales. However, this amount varies by retail segment as shown in Exhibit VI-1. These estimates were derived by talking to retailers and vendors, and using data obtained from various industry reports.

Exhibit VI-1

IT Budget as a Percentage of Sales

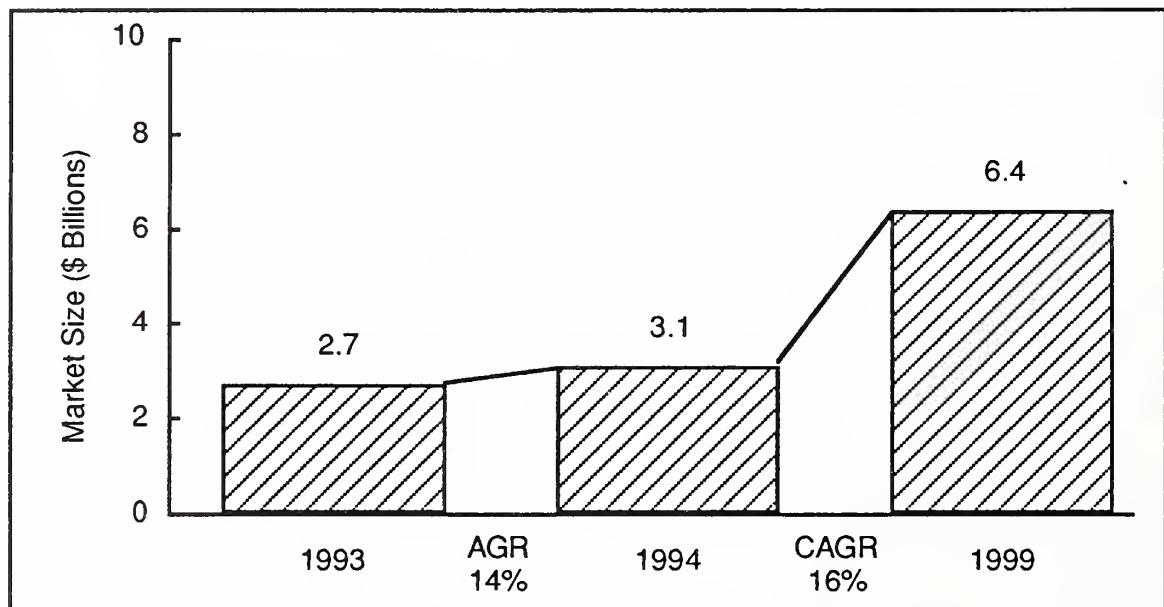
Retail Segment	Percent of Sales
Department Stores	1.10
Convenient Stores	.35
General Merchandise	.82
Specialty Apparel	.80
Specialty Hardlines	.94
Specialty Other	.90
Supermarket/Grocery	.80
Other	.55

IS expenditures for retail sales will advance from almost \$2.7 billion in 1993 to \$3.1 billion in 1994, and then climb to nearly \$6.4 billion in 1999.

As shown in Exhibit VI-2, these expenditures grew at an annual growth rate of 14% between 1993 and 1994, and will grow at an cumulative annual growth rate (CAGR) of 16% between 1994 and 1999.

Exhibit VI-2

Retail Market Information Services Spending, 1994-1999



This spurt in growth is due to the fact that the retail market is using information services to drive business growth, including the use of alternative channels of retailing (e.g., electronic shopping, catalog/telemarketing, virtual inventory) EDI, merchandising "Quick Response" systems, cost reduction, improved consumer services, and re-engineering to improve their business processes.

B

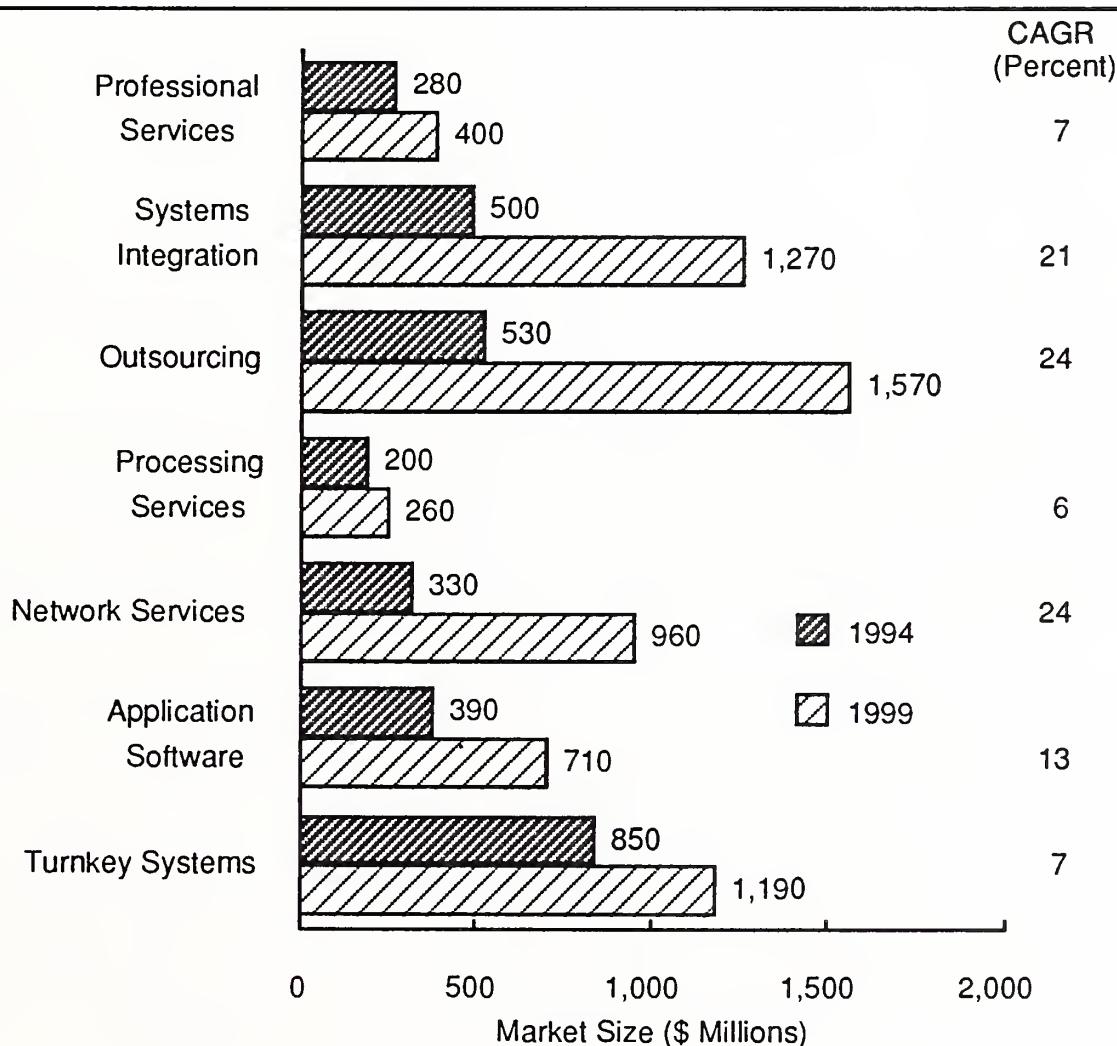
Forecast By Product/Service Sector

The 1994-1999 forecast of user expenditures by product/service sector in the retail sales sector is shown in Exhibit VI-3.

References in the text reflect the actual values shown in Appendix A. Discussions of the individual forecasts for each sector follows.

Exhibit VI-3

Retail Market Sector Information Services Market by Product/Service Sector, 1994-1999



1. Professional Services

The rate of growth for professional services will be slightly up (at 8%) in 1994 due to action taken in the wake of previously deferred expenditures. Long-range growth will remain at the 7% level, as

previously forecast, since much of the activity in retail sales is solution-oriented and doesn't emphasize the use of independent professional services.

2. Systems Integration

Expenditures for systems integration will grow at a rate of 21%, from \$400 million in 1993 to \$500 million in 1994. Growth will continue at a CAGR of 21% through 1999, to almost \$1.3 billion.

A number of major vendors offer systems integration services. For example, Andersen Consulting, Ernst & Young and Deloitte Touche offer SI services, while GEIS and EDS offer systems integration and processing capabilities. There are numerous other systems integrators, and systems integration is the vehicle for retailers to bring processing services in-house as they grow. Systems integration also offers the single-source relationship favored by retailers. Integrators provide the sophisticated skills to help retailers optimize their IT/IS expenditures, and to hold or improve slender profit margins.

3. Outsourcing

Outsourcing, along with network services, is the fastest growing delivery mode in the retail market. It will grow at a CAGR of 24%, from \$530 million in 1994 to almost \$1.6 billion in 1999.

The use of outsourcing for major (or all) parts of the IT function offers retailers the attractive option of fixing costs and having a single point of responsibility. This traditionally long-term commitment was threatened during the recession, but a slowly recovering economy and improved sales, especially those during the 1993 Christmas season, should help to maintain the aggressive growth forecast in 1994. However, there is some risk to spending for outsourcing from IT consolidations due to mergers.

4. Processing Services

Work conducted as part of this delivery mode includes:

- Debit, credit, check authorization, and check guarantee processing

- Capturing and processing of customer sales data and product data, in large database marketing and frequent shopper programs

Processing services expenditures will continue to grow at a CAGR of 6% for the next five years, from almost \$200 million in 1994 to more than \$260 million in 1999.

Larger stores and chains are moving processing services in-house, a trend for most large retailers in the U.S. Services used will be primarily for credit card processing and payroll. Defecting larger retailers will be replaced by smaller retailers entering the retail market, thus maintaining the modest 6% growth rate.

5. Network Services

Expenditures for network services will grow from just over \$330 million in 1994 to in excess of \$960 million in 1999, a CAGR of 24%.

The aggressive growth forecast for network services is driven by the expanding use of LANs, WANs, EDI, and electronic mail in the retail market. In addition, the "electronic shopping" movement, the "information superhighway", and the growth of efficient consumer response (ECR) business information sharing, database marketing and consumer loyalty program information systems will all drive the growth of network applications.

6. Application Software

Expenditures for application software products will grow from nearly \$390 million in 1994 to \$710 million in 1999, a CAGR of 13%. Most retailers are moving from large mainframe legacy systems to client/server workstations and networked PCs. This development and implementation of client/server applications and new client/server software tools is the primary driver for the applications software market segments.

7. Turnkey Systems

There is a logical limit to the growth of turnkey (integrated) systems as client/server and high-performance, low-cost systems become more common. It is not yet in sight, however, and in the meantime the market for turnkey systems continue to grow at a modest but steady 7%. Especially for smaller retailers, this option will continue to be attractive for some time to come.

At more than \$850 million in 1994, INPUT projects that turnkey systems expenditures will grow to almost \$1.2 billion in 1999, a five year CAGR of 7%.

VII

Competitive Environment

A

Competitive Climate

1. Retailers

In 1993 and early 1994, INPUT observes retailers boldly adopting aggressive measures to remain competitive and increase their sales and market share. These competitive actions include some of the following actions:

- Large retailers, such as Wal-Mart, Supervalu, Kroger are consolidating and expanding
- Large department stores are downsizing and consolidating, changing their merchandise mix, providing more consumer services, embracing greater use of advanced technologies (e.g., Quick Response merchandising, EDI), and using alternative methods of retailing (e.g., catalogs and telemarketing, kiosks, electronic shopping) in order to both stay competitive and grow.
- Mature retail companies are growing through international expansions, since they can no longer grow at an acceptable rate in their own countries.
- Retailers are outsourcing IT, since many retailers are finding that they cannot develop innovative technology solutions on their own, and within the time requirements needed to be competitive.

2. Vendors

In 1994, the vendors providing services in the retail IT arena are facing many challenges to remain competitive.

- Large systems integrators are consolidating. For example IBM-ISSC acquired Advantis (formally Sears Information System) to bolster their POS payment systems position in the market and increase their payment systems expertise.
- Specialty POS systems integration companies have been acquired by large systems integration companies. For example, Shared Financial Systems was acquired by Stratus Computer, and LeRoux Pitts was acquired by Nynex.
- Large database companies (such as Oracle and Sybase) have formed industry consulting groups, where they provide vertical industry applications development, systems integration, and specialized software for various vertical markets, including the retail vertical market.
- Oracle not only has an industry consulting group, but has formed a very large Business Process Reengineering group to provide strategic planning and business process reengineering services for all industries (horizontal markets) and across all vertical markets. These business process reengineering services directly compete with companies such as Andersen Consulting, SHL Systemhouse, Ernst & Young and EDS.
- Major computer hardware companies (e.g., IBM, DEC, HP, NCR) are now providing systems integration, software development, and a variety of consulting IT services to the retail industry. These computer hardware companies are now directly competing with Andersen Consulting, Ernst & Young, SHL Systemhouse, EDS and CSC.
- All vendors marketing IT services in the retail market are scrambling to become the client/server experts, and systems integrators are seeking to become the vendors of choice to the retail customer base.
- Systems integrators that can provide WAN-integrated technologies, both as a systems integrator and developer will definitely have a competitive edge in winning retail business. Companies such as GEIS, Deluxe Data Systems, Nynex, MCI, ISSC, Shared Systems, and others will all be well positioned for both electronic shopping and the information superhighway.

B**Vendor Profiles**

Brief, profiles of the ten vendors interviewed by INPUT are presented below. They illustrate the range of information service vendor competition in the retail sales industry.

Some vendors are concentrating on increasing revenue in a specific retail market as Shared Systems is doing with its POS Payment Systems products. These vendors provide one or more products, or an evolving set of services for the retail market. Other vendors are focusing on one or several specific information services modes and are addressing industries where those modes are apt to sell, as GEIS is doing with network services.

In addition to the companies that are profiled below many other major information service vendors serve the retail market. A list of these companies, along with the companies profiled in this chapter, are in the Appendix A, Exhibit A-4, Major Retail Systems Vendors.

**1. Andersen Consulting, Arthur Andersen & Co.,
69 West Washington Street, Chicago, Illinois, (312) 580-0033**

a. Company Strategy

In the last few years, Andersen Consulting has found more and more clients have been focused towards a broader, fundamental "re-engineering" or rethinking of their business activities, as opposed to narrow change. Andersen's consulting model for delivering solutions is "business integration"—the linkage of core business components. The components for business process reengineering are an organization's people, process strategy, and technology. Andersen has supported its belief in "business integration" by developing service lines that holistically address the client's organization. Those service lines include strategic services, systems integration, change management services and business process management.

b. Company Background

Andersen Consulting organized by Arthur Andersen & Co., as a separate firm in 1988 to address its rapidly growing information services business. Estimated worldwide revenues in 1992 were

\$2.7 billion and total revenue for 1993 is estimated at \$3.24 billion—a 20% increase over 1992.

c. Products and Services

Over 70% of its work involves the use of client/server technology, and Andersen Consulting continues to commit major resources to its six industry practice groups, including retail sales. Andersen Consulting is positioned to meet the multi-national needs of clients with operations in 47 countries. Over half of Andersen's revenue is derived from outside the U.S.

2. Deloitte Touche, Ten Westport Road, Wilton, Connecticut 06897 (203) 761-3000

a. Company Strategy

In response to today's complex business environment, Deloitte Touche provides a broad range of services. They provide (1) accounting, auditing, tax, merger and acquisitions, and other specialized services, (2) management consulting and information technology consulting and (3) they are targeting specific industries such as health care, retail and distribution services, real estate, public utilities, and financial services.

b. Company Background

The Deloitte Touche consulting organization was founded in 1947. This arm of the company was intended to be general management consultants with implementation oriented in areas of advanced technology, operations and strategic planning. Today, Deloitte Touche Consulting practices bring in revenues over \$100 million and has staff of over 1,000 employees.

c. Products and Services

The management consulting practice offers services that range from strategy development through the implementation of information system and systems integration. The retail and wholesale market services industry consulting group is the largest specialty practice. Deloitte Touche serves the 10 largest general merchandisers, 7 of the top 10 grocers, 6 of the top 10 retail drug chains, 16 of the 50 largest wholesalers, and 9 of the top 10 department store chains.

3. SHL Systemhouse, 50 O'Connor Street, 5th Floor , Ottawa, Ontario, Canada K1P612 (613) 236-1428

a. Company Strategy

SHL Systemhouse provides systems integration consulting services, computing and network services, and outsourcing services.

SHL Systemhouse success is in the global market. For instance, it offers services in the U.S. commercial market, is rapidly growing in the Latin American market, is a major vendor in the Canadian market, and is now a presence in the European market, with its acquisition of the Computer Group Limited.

b. Company Background

SHL Systemhouse, Inc. was founded in 1974. In July 1992, SHL completed a public offering of 46 million shares of its common stock, netting the company \$47.5 million in proceeds. SHL operates through three principle strategic units: (1) Strategic Area Units—includes Canada/Pacific; Pacific Rim; U.S., Mexico, Central and South America; and Europe; (2) Strategic Marketing Services—provides vertical market expertise. There are currently eight strategic market units: postal, telecommunications, public safety, energy, human services, insurance, financial services, and logistics (focusing on retail, manufacturing, and consumer products); (3) Strategic Technology Services—ensures that delivery units throughout the company are equipped with the necessary skill, methodology, and tools to remain abreast of rapidly evolving and increasingly complex information technology systems. SHL Systemhouse billed over \$900 million in 1993.

c. Products and Services

SHL management states that 100% of the company's revenues is derived from systems integration and outsourcing activities. Approximately 58% of revenue comes from hardware and software sales, 37% from professional services, and 5% from systems operations. SHL's base of business over the last few years has shifted from short-term contracts to long-term contracts with higher profit profiles.

**4. Ernst & Young, 78 Seventh Avenue , New York, New York
10019 (212) 773-3000**

a. Company Strategy

Ernst & Young is the second largest professional services firm in the U.S. The company's strategy is to provide a wide range of management consulting services, organized to meet the needs of the specific industries it serves.

b. Company Background

Ernst & Young Management Consulting Group was founded in 1989 and operates as a separate division of Ernst & Young Accounting firm. The management consulting organization is organized into four Management Consulting Groups and the National Practices Group.

c. Products and Services

The Management Consulting Group offers services that range from strategic planning through the implementation of information systems, system integration, and systems development. The retail market (along with eight other vertical markets) is one of Ernst & Young's largest markets served. Ernst & Young has a global presence with its Management Consulting Services and serves some of the world's largest retailers. Ernst & Young has many alliances with specific technical application companies, such as Retail Systems Architects (RSA) for their high level retail decision support systems, Ingres for specific retail tool sets, and several client/server tools companies.

**5. GE Information Services, 401 North Washington Street
Rockville, MD 20850 (301) 340-4000**

a. Company Strategy

GE Information Services (GEIS) currently provides transactions and utility processing, inquiry/response, EDI, and value-added network services. Systems integration, software development and network management professional services are provided to over 13,000 corporate and association clients worldwide. Its focused industries include: international banking and finance services, international trade and transportation, retail, apparel, and merchandising, telecommunications, automotive/heavy

equipment, and manufacturing, petroleum and chemical industries, and high technology.

b. Company Background

GEIS was founded in 1979 as GE Information Services Company to consolidate GE company's Mark III worldwide interactive and remote batch processing services (originally introduced in 1965 under the Mark I name, as the first interactive processing service commercially available in the U.S.). In January 1984, GEISCO once again became an internal component of GE, and its name became GE Information Services (GEIS). Approximately 60% of GEIS's revenue is derived from U.S. and 40% from international sources.

c. Products and Services

The GEIS network is the company's worldwide teleprocessing network based on a proprietary packet-switching protocol. It permits multi-site organizations to transmit data to dispersed terminals and host computers around the world, with approximately 600 access points in the U.S. and in-country direct access in 35 countries.

GEIS services are generally categorized into the following application areas: (1) Industry application, financial services, transportation, retail, telecommunications, high technology, manufacturing, and chemical and petroleum; (2) EDI; (3) Business communications; (4) Managed network services; (5) Network and processing services and; (6) On-line consumer information services.

6. Kronos, Inc., 400 Fifth Avenue, Waltham, MA

a. Company Strategy

Kronos, Inc. is one of the world's leading suppliers of automated time accounting systems. The company is dedicated to providing systems which enhance the productivity of the retail work force, especially in the areas of manufacturing, health care, hospitality (hotel, restaurant and motel) construction, and government service).

b. Company Background

Kronos is a \$67 million company with worldwide sales and services offices in North America and the United Kingdom. Kronos has over 100 dealers operating in Mexico, continental Europe, Australia, and most Pacific Rim countries—including Hong Kong, Singapore and the Philippines.

c. Products and Services

Kronos offers several products to the retail industry. They include: (1) Retail Work Force Management System - a fully automated time accounting and automated scheduling system; and (2) Time Keeper Control - offers a total time accounting solution that dramatically streamlines payroll preparation and labor cost reporting.

These comprehensive software products impacts retail labor costs, management time, payroll accuracy, customer service, and employee morale.

**7. Micro Strategy, Inc., One Christina Center, Wilmington, DE
19801 (302) 427-8806****a. Company Strategy**

Micro Strategy, Inc. provides high-level executive retail decision support systems, systems integration and software development services for the retail industry. The company's strategy is to provide a new level of decision support information which can be easily accessed by senior executive decision makers. The goal of this technology is to avoid costly retail operations failures, and make accurate retail operations decisions.

b. Company Background

Micro Strategy, Inc. was founded in 1990. It has doubled its sales every year it has been in business, and presently is doing between \$15-20 million in the retail industry. The company has five offices in the U.S. and Canada, and also has offices in Spain, the United Kingdom, and France. Micro Strategies, Inc. plans to expand to Western Europe in the next three years. Clients include large retailers such as K-Mart, Dayton-Hudson, Circuit City, and Wal-Mart.

c. Products and Services

Micro Strategy provides decision support systems which are customized for specific retail company needs, to do ad hoc reporting, ad hoc analysis automated analysis, and automated decision making. The systems are ported to client/server platforms with a Windows-like user interface and integrated into major database products.

8. Oracle Corporation, 500 Oracle Parkway , Redwood Shores, CA 94065 (415) 506-7000

a. Company Strategy

Oracle's flagship product—the Oracle relational database management system—was introduced in 1979, and is surrounded by a family of related applications and development tools. The company is the world's largest supplier of database software and offers its products, along with support, education, consulting and systems integration services, in 92 countries around the world. Oracle's strategy is to continue to add to its product line by developing a complete family of horizontal and vertical applications around its core products. Oracle plans to grow its consulting group rapidly by providing business process reengineering and specific industry consulting service in vertical markets—including the retail market.

Oracle also plans to continue its rapid growth of systems integration services in order to provide customers with a cost-effective, single source of responsibility for the implementation of total system solutions—including hardware, software, and networking.

b. Company Background

Oracle was founded in 1977. When first released in 1979, Oracle's databases were the world's first databases to be implemented on UNIX platforms. It used the SQL language, now an industry standard. In 1983, Oracle was ported to mainframes, minicomputers, and PCs. In 1991, Oracle became the first database to run on massively parallel computers and perform 1,000 transactions per second on the industry standard TPCB benchmark.

c. Products and Services

Oracle supports over one hundred hardware platforms, including most major mainframes, minicomputers, PCs, and a wide range of UNIX platforms.

Oracle offers a standard range of products worldwide with a commitment to local language and local hardware support in all countries. It offers products in the following categories:

- Relational database
- CASE and application development tools
- Oracle servers
- PC-based client/server tools
- Office automation and end-user products

Oracle has four service organizations which include: support, education, consulting, and systems integration.

9. IBM - Integrated Systems Solutions Corporation (ISSC), 560 White Plains Road, Tarrytown, New York 10591 (914) 333-3030

a. Company Strategy

ISSC is committed to both conventional outsourcing and custom tailored alliances across a broad range of vertical industry. In early 1993, ISSC expanded its vertical market focus from 11 to 16 sectors.

ISSC provides day-to-day management for significant portions—if not all—of a client's IS infrastructure, including operations, production control end-user support, maintenance, and application development and maintenance. ISSC may also work with clients to design a new IS environment, and then develop and manage the total implementation. The implementation may include consolidation of multiple data centers, voice, and data networks, standardization of platforms, application convergence, and systems management.

b. Company Background

Integrated Systems Solutions Corporation (ISSC) was formed as a wholly owned subsidiary of IBM to establish IBM market leadership as a world-class supplier of outsourcing services to both external and internal customers. ISSC continues to operate without its own sales staff. ISSC's marketing teams meet with customers only after IBM sales staff have first identified prospects while selling other products.

In May 1992, ISSC and Federated Department Stores, Inc. formed a seven-year partnership to provide outsourcing services to the large-scale retail market. ISSC serves as prime contractor for IBM marketing, ISSC hardware, and retail software applications developed by the Federated Systems Group (formally called the Sabre Group).

During 1992, ISSC acquired Sears Information Systems, now called Advantis.

c. Products and Services

ISSC provides systems and network operations, systems integration technology consulting, applications development and maintenance, and business recovery services.

ISSC currently participates in a range of vertical industry segments, including finance and securities, health, insurance, process manufacturing, retail and wholesale, state and local government, transportation, media, communications, lodging, and utilities. ISSC's outsourcing contracts are long term in nature, typically five to ten years.

10. Shared Systems, Inc. (wholly owned subsidiary of Stratus Computer), 1530 Dallas Parkway, Suite 600, Dallas, Texas 75248

a. Company Strategy

Shared Systems' strategy is to provide its products and services to targeted vertical markets. Approximately 55% of Shared Systems' revenue is derived from banking and financial services, 30% from retailers, 10% from pharmacies/health care companies, and 5% from other sources.

b. Company Background

Shared Systems (formally Shared Financial Systems, Inc.) was founded in 1982. SSI provides transaction processing software products used by bank, financial service firms, retailers, pharmacies, health care providers and other companies for business-critical applications on UNIX-based connectivity and development platforms.

Major clients include four of the world's top 5 credit card companies, 6 of the world's 12 largest banking institutions, 6 of the top U.S. retail drug chains, and 50 of the worlds leading retail organizations, health care transaction processors, and insurance providers. Of its installed base, approximately 45% of the installations are in the U.S., and 55% are outside the U.S.

In 1993, Shared Financial Systems was acquired by Stratus Computer Corporation, and changed its name to Shared Systems, Inc.

c. Products and Services

Shared Systems has developed an open system, on-line transaction processing (OLTP) application development "engine", a network/gateway communications platform, and a client/server transaction network. The company has unbundled its products into modules that are available separately, based on the requirements of its bank, financial services, retail, pharmacy, and health care clients.



Conclusions and Recommendations

A

Conclusions

The retail industry is radically changing due to a number of factors. The down-turn of the economy during the early 1990s, caused retailers to adopt new competitive strategies and progressive technical programs which are now driving business opportunities. These actions and programs include: downsizing and consolidation; implementing alternative retail "non-store" merchandising channels; changing merchandise mix; and developing the technological processes needed to effectively work with suppliers and manufactures as partners rather than as adversaries. Retailers are, in addition, developing more and varied "customer services" to attract new, and keep existing, customers.

However, the most significant change in the last few years, is the fact that retailers, more than ever before, are embracing information technology as an agent of change; and they are committed to using technology to advance and grow their businesses. In effect, retailers are entering a time of accelerated change. Retailing has always been about managing change— changing seasons, changing fashions, and changing customers. Today retailers are embracing technology not just to keep up with these changes in the industry, but also to help drive change and facilitate growth.

B

Recommendations

1. Retailers

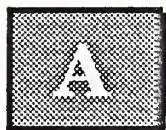
- Retailers need to become comfortable with technology. As the result of the application of technology, the pace of change in the retail business is getting faster, and retailers need to respond rapidly in order to compete effectively in the retail industry in the 1990s.
- Align corporate goals with "business processes" rather than concentrate on cost centers and cost reduction, and learn to redeploy resources in services that will improve both sales and return on investment.
- Implement at least one alternative channel of "non-store" merchandising (e.g., electronic shopping, kiosks, event planning, or catalog merchandising).
- For mature retailers, recognize that you may no longer be able to grow at an acceptable rate in your own country. Look to foreign international markets for growth. Consumer spending is lower in the 1990s, and you must look for consumption-oriented markets overseas.
- Start preparing for the information superhighway. View this technology as a future distribution channel. As mentioned earlier in this report, some companies are willing to be pioneers (e.g., Macy's Winn Dixie, Nordstrom) and are boldly embracing this new distribution channel.
- Put together an on-going plan to get to know your customers. Plan to provide "extra" services so that customer service is the number one priority, not only for survival, but to gain new customers, and keep your existing customer base.
- Change your merchandising mix to accommodate different demographics in your local areas.
- Develop customer databases to track and profile customers, analyze and monitor shopping patterns of customers in different demographic groups, and target customers with incentives.

- Plan more direct mail campaigns to targeted specific customer demographic groups.
- Plan to outsource much of your IS to stay competitive. Most retailers generally can't develop innovative technology solutions on their own within the time requirements needed to be competitive.
- Migrate your mainframe/legacy systems to client/server PC or workstation environments. Become more software solutions oriented, rather than hardware dependent.

2. Vendors

- Make client/server your number one development priority. Use client/server tools for systems development and systems integration services.
- Offer more business process reengineering services for your retail customers. Retailers are in a time of radical growth and change in how they do business.
- Form strategic development partnering alliances with non-competing vendors—e.g., hardware, networking, and systems integration vendors.
- Stay focused with specialized products and/or service offerings, (e.g., Shared Systems' POS Payment Systems, and GEIS/networking services).
- Think globally. Market your products and/or services in at least one international country.
- Provide your clients with applications "processes" not technology "products".
- Develop user interfaces with user friendly icons and graphical user interfaces. (GUIs)

- Provide more and better training materials that are intuitive and easy to grasp and use. As part of these training materials, develop training sessions and classes for high-level executive users.
- Develop more retail executive decision support systems, geared for specific retail market segments.



Forecast Database

This appendix contains the forecast data base for the period 1994-1999, and the 1994 Market Analysis Program database reconciliation for retail sales.

A

Forecast Database

Exhibit A-1 presents the detailed 1993 actual and 1994-1999 forecast for the retail sales market sector.

Exhibit A-1

**Retail Sales—Market Size Forecast by
Product/Service Sector, 1993-1999**

Product/Service Sectors	1993 (\$M)	93-94 %GR	1994 (\$M)	1995 (\$M)	1996 (\$M)	1997 (\$M)	1998 (\$M)	1999 (\$M)	CAGR 94-99 (%)
Sector Total	2,696	14	3,071	3,518	4,048	4,683	5,445	6,356	16
<i>Professional Services</i>	257	8	277	298	321	346	371	396	7
- IS Consulting	66	8	71	77	84	91	98	106	8
- Education & Training	38	5	40	42	44	46	49	52	5
- Software Development	153	8	166	179	193	209	224	238	7
<i>Systems Integration</i>	409	21	493	592	711	858	1,037	1,268	21
- Equipment	242	21	294	355	428	518	627	768	21
- Software Products	30	17	35	41	48	56	67	79	18
- Professional Services	126	20	151	181	217	263	319	394	21
- Others	11	18	13	15	18	21	24	27	16
<i>Outsourcing</i>	432	24	534	661	822	1,021	1,270	1,569	24
- Platform Operations	195	23	240	295	360	440	520	631	21
- Application Operations	133	25	166	207	263	327	400	485	24
- Desktop Services	60	22	73	90	113	146	211	276	30
- Network Management	44	25	55	69	86	108	139	177	26
<i>Processing Services</i>	186	6	197	209	222	235	249	264	6
- Transaction Processing	186	6	197	209	222	235	249	264	6
<i>Network Services</i>	271	22	331	408	503	624	775	963	24
- Electronic Info Services	172	19	204	245	292	347	413	485	19
- Network Applications	99	28	127	163	211	277	362	478	30
<i>Application SW Products</i>	341	13	387	440	498	561	634	710	13
- Mainframe	51	6	54	57	59	61	63	65	4
- Minicomputer	150	12	168	188	209	229	251	268	10
- Workstation/PC	140	18	165	195	230	271	320	377	18
<i>Turnkey Systems</i>	800	7	852	910	971	1,038	1,109	1,186	7
- Equipment	351	4	365	380	395	411	427	444	4
- Software Products	305	7	326	349	374	400	428	458	7
- Professional Services	144	12	161	181	202	227	254	284	12

B**Forecast Reconciliation**

Exhibit A-2 offers a reconciliation of the 1993 and 1994 forecasts for the retail sales market sector.

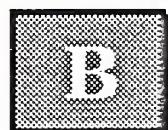
Exhibit A-2

**Retail Sales
1994 MAP Database Reconciliation (\$ Millions)**

Product/ Service Market	1993 Market				1998 Market				93-98 CAGR per data '93 Rpt (%)	93-98 CAGR per data '94 Rpt (%)
	1993 Market (Forecast) (\$M)	1994 Report (Actual) (\$M)	Variance From 1993 Forecast		1993 Market (Forecast) (\$M)	1994 Report (Forecast) (\$M)	Variance From 1993 Forecast			
			(\$M)	(%)			(\$M)	(%)		
<i>Total</i>	2,691	2,696	5	0	5,367	5,445	78	1	15	15
Professional Services	255	257	2	1	365	371	6	2	7	8
Business Integration	400	409	9	2	1,000	1,037	37	4	20	20
Outsourcing	435	432	-3	-1	1,253	1,270	17	1	24	24
Processing Services	186	186	0	0	255	249	-6	-2	7	6
Network Services	269	271	2	1	734	775	41	6	22	23
Applications Software	342	341	-1	0	630	634	4	1	13	13
Turnkey Systems	804	800	-4	0	1,130	1,109	-21	-2	7	7

There were only minor variances between the 1993 projection for 1993 expenditures and the actual amounts noted in the 1994 report. The largest variance was a 2% 1993 understatement of systems integration revenues, the result of a more rapid than expected growth in the use of that resource to support the IT changes occurring in this industry.

Variances in the market projections for 1998 ran from a 2% 1993 overstatement of estimated spending for processing services and turnkey systems, to spending underestimations of 4% for systems integration services and 6% for network services. These long-range variances reflect the diminishing emphasis on dedicated systems and outside processing services, and the growing importance network delivery systems and complex system environments, driven by the strong move in this industry towards client/server architecture. Five-year growth projections vary by no more than a percentage point—an indication that fundamental growth patterns are not changing, but merely elongating or contracting slightly in response to technology and market pressures.



Questionnaires

This appendix contains abbreviated versions of the questionnaires used to gather data when interviewing vendors and retailers for this report on the retail sales industry. Where requested, confidentiality of data or responses has been maintained, and all completed questionnaires are treated as confidential by INPUT.

A

Vendor Questionnaire

The following questions were asked of the ten vendors identified in Chapter I of this report. Their responses were then used in the process of completing this report.

Questionnaire for Retail Trade Report (Vendors)

I. General Information

1. Company _____
2. Address _____

3. Total Revenue/Sales 1993 1994 Next 5 years-1999
_____ _____ _____

4. Respondent(s)

Name _____

Title _____

Phone/ext. _____

II. Specific Vendor Information

1. What technical trends and new technology application trends do you see coming in retailing over the next two to five years (e.g., home shopping, virtual inventory, etc.)?
2. What general business trends do you see happening in the retail industry?
3. What retail application development efforts have provided your company the biggest success for retailers in the last two years. And which applications do you see your organization developing and implementing in the next few years?
4. Are you seeing retailers moving to client/server environments. If so, which retailers and what applications?
5. Do you use client server tools in your development for retailers, and if so, which tools? (Powersoft, Gupta, Other?)
6. What platforms are you using in your development and systems integration, and which operating systems do you use?
7. What applications are you developing or implementing most often in retailing establishments?
8. Are retailers moving mission critical applications to client server platforms, or making plans to move mission critical applications to client server platforms?
9. Are you implementing EDI applications? Which applications? And what new EDI applications are you planning to develop and implement in the next two to five years?

10. Do you develop and/or implement POS payment systems (e.g., debit, credit, and check authorization systems).
11. Are you doing overseas development and implementation. Which countries? And which applications, in which countries?
12. Are retailers outsourcing more development, project management, and maintenance than they did two years ago? If so, why is this happening?
13. What percent of your sales revenue is devoted to IT development with your clients?
14. Are you doing joint development and/or joint implementation with other systems integrators, developers, and/or hardware companies?
15. What are your retail client's IS department objectives over the next year? And over the next two to five years?

B**Retailer Questionnaire**

The following questions were addressed to the ten retailers noted in Chapter I. Their responses served as input to this report.

Questionnaire for Retail Trade Report (Retailers)**I. General Information**

1. Company _____

2. Address: _____

3. Total sales this fiscal year _____

4. Growth over past 5 years—% of market company owns;
Locally? _____

Nationally? _____

5. Respondent(s)

Name _____

Title _____

Phone/ext. _____

II. Specific Retailer Information

1. What is your company IS (or MIS) system organization structure?
e.g., (1) Corporate Central IS
(2) Divisional System IS
(3) Communications & Network Services
(4) Store Systems
(5) Other
2. Which new applications have you implemented in the last five years?
3. Which new applications do you plan to implement in the next few years?
4. Of these applications, which organization has/had the primary responsibility for the project/application installation?

Corp. IS____ End-user Management____ Other____

Div. IS____ Store Systems____

5. Which applications do you plan to re-engineer or replace in the next five years?
6. Which applications involve EDI/network linkage with customers, suppliers, or others outside?
7. Do you have plans to develop or move mission critical applications to client server?

If yes, which applications are most critical and in what time frame do you foresee making the transition for each system or application?

8. Which applications have already/or are in the process of moving to client server?
9. To what degree are you looking to outside vendors for products and services? (%)
10. What applications or development are you planning to outsource, and from which vendors are you evaluating for these applications or development?

Packaged software

Systems integrators

Other professional services

11. What platforms are most likely to be used? (hardware, operating systems) ?
12. Are you planning to use client server tools for your development? If so, which tools? (PowerSoft? Gupta? Other?)
13. What is your total budget for systems this year, and over the next several years?
14. What is the expected cost for each application you are planning to implement or re-engineer?
15. What vendors have been providing you with computers, systems integration/ applications, etc.?

Vendor	Product/Service	Strength/Weaknesses
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16. What applications trends do you see coming in retailing over the next two to five years? (e.g., home shopping? virtual inventory? etc.)
17. What applications have been your biggest successes and which ones have been your biggest weaknesses?
18. Which applications provided you with the biggest return on investment/ and which ones did not provide the expected return on investment?

